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FORTH2LATEX Manual

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version 1.9

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Contents

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1 What is it?

Forth2L^AT_EX is a program designed to format Forth source code for L^AT_EX. It presently runs in Modula-2 and C on the Macintosh and in C on Unix, VMS, and MS-DOS. This manual describes all versions noting differences where appropriate. Source code for both the C and Modula-2 versions is included for those interested in modifying the program to suit their own needs. Forth2L^AT_EX intentionally knows little of Forth . It knows what a *backslash* comment is and the words `:` (colon), `VARIABLE`, `CONSTANT`, `CREATE`, `FVARIABLE` and `FCONSTANT`. This does not tie it to a specific Forth system making Forth2L^AT_EX useful to the widest possible audience.

Forth2L^AT_EX features include:

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1. Ability to **bold** word names when defined.

2. Creating an index of defined words and the line on which the word was defined.

3. Printing useful program information.

4. Complete L^AT_EX access from within the source code in three different ways.

5. Different type styles for code and comments.

6. Ability to create a table of contents and section the code in a way similar to L^AT_EX.

7. Command files allow processing groups of files at a single time.

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Forth2L^AT_EX *does* impose one minor constraint on the programmer, namely, it only recognizes \ comments and therefore will treat comments in parentheses as code. This is really a minor inconvenience as parentheses are usually reserved for stack effects comments.

2 Getting Started - A Guide for the Impatient

If your copious free time is insufficient to allow a complete reading of this little manual, this is a good place to start. The guide is divided by computer: Macintosh or Everyone Else.

2.1 Macintosh

Double-click the Forth2L^AT_EX application to get it going. All parameters can be set via the **Settings** menu. Just choose the setting and it toggles between on or off. Switching between **report** and **article** for the style will use the respective L^AT_EX document style. Typically, longer programs make sense as reports while shorter programs are articles. Chapter sectioning may only be used (or rather is ignored unless) the style is set to **report**. Leave the **Comments** as **FORTH** unless you have included L^AT_EX code in the comments.

Choose **Open...** from the **File** menu and select a Forth source code file. If the filename ends in `.4th`, `.fth`, or `.forth` the extension will be stripped. Select an output filename using either

the one suggested or your own with `.tex` appended. FORTH2L^AT_EX will process the file and tell you how many lines it processed when finished.

2.2 Everyone Else

Enter `Forth2LaTeX` on the command line to see a quick help screen listing the format and switches. Most a self-explanatory in nature, the rest are described below.

3 Controlling FORTH**2**L^AT_EX

There are two ways of controlling the operation of FORTH2L^AT_EX : via menu or command line switches, or via FORTH comments within the source code. The latter will always override the former. Needless to say, only the Macintosh version uses menus, the rest use command line switches.

3.1 Source Code

All versions of FORTH2L^AT_EX can be controlled by comment statements within the FORTH source code. It is important to note that spacing and capitalization *are* important.

3.1.1 Settings

FORTH2L^AT_EX settings and information about the program are entered in the following form:

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```
    \ Program: <program name>    -- name of the program
    \ Author: <author name>       -- name of the author, appears
in the title
    \ Started: <date>              -- date program begun
    \ Modified: <date>             -- date of last modification
    \ Modify By: <name>           -- person doing the
modification
    \ Summary: <single line>     -- a one line summary of the
program


    \ Comments: FORTH              -- comments are as normal
    \ Comments: LATEX              -- comments are treated as
LaTeX code


    \ Uppercase: ON or OFF       -- force all but strings and
comments to

                                    uppercase
```

```
    \ Table of Contents: ON | OFF   -- make a table of contents,
use with

                                    sectioning


    \ Index: ON | OFF               -- output an alphabetical
index of defined words


    \ Bold: ON | OFF                -- bold colon definitions


    \ Style: REPORT                 -- use \documentstyle{report}
    \ Style: ARTICLE                -- use \documentstyle{article}
```

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Certain characters have a special meaning to L^{A}T$_E$X and need to be escaped by prefixing with a \ when using normally. FORTH2L^{A}T$_E$X does this automatically for code, including the spaces to force L^{A}T$_E$Xto preserve the indentations, but can be told to stop this for comments. The default setting is FORTH which escapes the text in comments as elsewhere. Changing Comments to LATEX allows the programmer to include L^{A}T$_E$X code in the comments, but also makes the programmer responsible for using appropriate escape sequences when necessary. Note that the settings above can appear anywhere within the source code, but must appear in the first file to be processed when using multiple files.

3.1.2 Sectioning

FORTH2L^{A}T$_E$X recognizes the standard L^{A}T$_E$X sectioning commands, though it ignores chapters unless in REPORT style. Sectioning provides a convenience way to organize the source code and to create a table of contents that outlines the program structure. To use sectioning, include statements giving the name of the section prefixed by the type of section:

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```
    \ Chapter: <chapter-name>    -- start a chapter (LaTeX
\chapter)


    \ Section:                      -- sections and subsections
    \ Subsection:
    \ Subsubsection:
```


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3.1.3 Other Ways of Including L^AT_EX Code

The `Comments:` setting described above is only one of three ways to include L^AT_EX code in the FORTH source code. The others are to use a special L^AT_EX escape character or to use a `\ .` to prefix a line that will be passed as is into the output file. The former is most useful for inserting a small piece of code:

```
\  `$c_{m}$` is set here
```
appears as is set here

The escape character is ` (backquote). Everything between backquotes is immune to special character escaping and can include valid L^AT_EX statements.

To include an entire line, useful for entering normal text, prefix the line with a `\ .` where every character after the period is sent as is into the output file without escaping or forcing into a single line:

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```
\ .This will appear in the output as if it were entered into a
normal
\ .\LaTeX document.   This could be used to insert large blocks of
text
\ .describing the code, or to even include graphics.
```

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3.2   Command Line Switches and Menu Settings

It is possible change FORTH2L^AT_EX settings without specifically stating the settings in the source code. The Macintosh uses a menu called (surprisingly) **Settings** to adjust FORTH2L^AT_EX values prior to processing a file. Each of the menu items has a direct counter part in the source code settings given above.

Other computers use command line switches to alter the functioning of FORTH2L^AT_EX . The general format is: `Forth2LaTeX  source-file  switches` where the `switches` consists of a string of characters (case is irrelevant) prefixed with a − (dash). The options are listed below:

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```
u   -- uppercase code (does not alter comments)
l   -- comments LATEX (default is FORTH)
t   -- generate table of contents
i   -- index of defined words
b   -- bold colon definition names
r   -- style is REPORT (default is ARTICLE)
```

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3.3 Multiple Files

If FORTH2L^{A}T$_E$X is presented a file with a `.f2l` extension it will assume it to be a command file that contains the names of a series of files to be processed. Comments, preceeded by a # character, may be added to the file. A sample command file could be:

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```
# The following specifies the output file name, default is
'a.tex'

# Output: Alexis.tex

# These are the files to be processed, in order:


        Setup.4th               # mainly memory management, constants,
etc.
        Arith.4th               # big integer and rational arithmetic
and utilities
        Poly.4th                # univariate polynomial routines and
utilities
        Command.4th            # Yerk code and command processor
        Intrinsic.4th       # Built-in commands

# That's all folks!
```

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The third line above is used to specify the output file name, which defaults to `a.tex`. Unless complete path names are given in the command file FORTH2L^{A}T$_E$X assumes that the files can be found in the current directory. Use a command file when working on a larger project with multiple files.

4 Conclusion

It is sincerely hoped that FORTH2L^{A}T$_E$X will be of use to you. It was originally designed to spice up the output for a project (the command file for the project is the example above) and has evolved into a bit of a project itself. It is also hoped that users will feel free to alter the source code for any of the versions, provided that the author is sent a copy if the modified version is to be released publicly.

Suggestions and bug reports (Bugs? What are those?) are to be sent to the email address given at the beginning of this document. The author assumes no responsibility of any kind for any loss

of data or time that may be caused by the use of this program. While it is unlikely that something will happen, if it does, I'm not to blame.